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UNITED STATES PATENT APPLICATION

FOR

**POWER UNIT FOR JUMPING ROPE - WITH TIMER CIRCUIT**

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## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to an apparatus that can automatically rotate a jump rope.

### 5    2. Prior Art

U.S. Patent No. 4,739,985 issued to Rudell et al., discloses a motorized unit that can automatically rotate a jump rope. The motorized unit includes a motorized rotating hub that can be coupled to one end of a jump 10 rope. The hub can be coupled to a pedestal so that the jump rope can rotate about a horizontal axis. The other end of the jump rope can be attached to a post or other stationary object. The apparatus allows the players to "jump rope" without manually swinging the rope. The 15 apparatus also has a vertical mode wherein a hub platform is laid on the ground and the rope swings about a vertical axis. A player(s) then jumps over the swinging rope.

The Rudell motorized unit has an on/off switch located on the hub platform. Unfortunately, it is 20 difficult to reach the platform and turn off the switch while jumping rope. Additionally, when in the vertical

mode, it is difficult to turn on the motorized hub without getting whipped by the rope and adjoining crank arm. The patent addresses this issue by describing a wireless transmitter that can be worn by the user to turn the 5 motorized hub on and off. Wireless transmitters add to the cost of the product and are susceptible to damage, thereby rendering the apparatus inoperative. The patent also describes the use of a pull string, but the string may become entangled with the rope.

10 The owner of the '985 patent had developed a product that included a timer. The timer would control the time interval at which the motorized hub would be active. Unfortunately, the user had no indication of when the motor was to start or end.

15 There have been marketed a number of jump rope games such as SKIP-IT, TWIRL N JUMP, SKIP STICK and STICK-N-ROPE that all required manual activation of the rope.

BRIEF SUMMARY OF THE INVENTION

An apparatus that can move a jumping element. The apparatus includes a motor that is attached to a housing and coupled to a hub. The hub is adapted to be coupled to 5 the jumping element. The apparatus also includes a timer that is coupled to the motor. An indicator is coupled to the timer.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view showing players using an apparatus that swings a jump rope;

5 Figure 2 is a perspective view showing a motorized rotating hub of the apparatus;

Figure 3 is a side view showing the coupling of a jump rope to a crank arm;

Figure 4 is a side view of a spring biased hub;

10 Figure 5 is an exploded view of the spring biased hub;

Figure 6 is a sectional view showing a motor and gear assembly of the apparatus;

Figure 7 is a schematic of an electrical system of the apparatus;

15 Figure 8 is a perspective view of an alternate embodiment of the apparatus;

Figure 9 is a perspective view of an alternate embodiment of an apparatus that operates in a vertical mode;

20 Figure 10 is a perspective view of an alternate embodiment of an apparatus that can operate in both a horizontal mode and a vertical mode;

Figure 11 is a perspective view showing a hub platform being coupled to a vertical mode base.

#### DETAILED DESCRIPTION

Disclosed is an apparatus that moves a jumping element. The apparatus includes a motorized hub that is attached to a housing. The hub can rotate a jumping element, such as a jump rope, about a horizontal axis and/or a vertical axis. The hub is connected to a motor that is controlled by a timer. A player can select a time interval that establishes the activation time of the motor. The apparatus includes an indicator that may provide an indication of the time interval. The indicator may be an LED that indicates the numerical value of the time interval. The apparatus may also have an indicator that provides an indication of when the motor is to be activated, so that the player can be in position when the hub begins to rotate the rope.

Referring to the drawings more particularly by reference numbers, Figures 1 and 2 show an apparatus 10 that can swing a jumping element 12. The jumping element 12 may be constructed as a jump rope. The apparatus 10 includes a hub platform 14 that is coupled to a horizontal base 16 by a pedestal 18. The horizontal base 16 may have

a port 20 that allows the base 16 to be filled with water or sand to weigh down the apparatus 10.

The apparatus 10 may further include a crank arm 22 that is coupled to a rotating hub 24. The crank arm 22 5 may be attached to one end of the jump rope 12. The other end of the rope 12 may be attached to a post 26 or other stationary structure. The crank arm 22 may have a protective sleeve 28 constructed from an impact absorbing material such as a soft foam.

10 The hub 24 may rotate about a horizontal axis 30 to swing the rope 12 in an automated manner. The hub platform 14 may include buttons 32, 34, 36 and 38 that can be depressed by a user to set the time interval for rotation of the hub 24. Each button 32, 34, 36 and 38 has 15 a corresponding indicator 40, 42, 44 and 46 that provides an indication of the time interval selected by the user. The indicators 40, 42, 44 and 46 may be light emitting diodes (LEDs).

By way of example, button 32 and indicator 40 may be 20 associated with a 1 minute interval, button 34 and indicator 42 may correspond to a 3 minute interval, button 36 and indicator 44 a 5 minute interval, and button 38 and

indicator 46 a 10 minute interval. The platform surface may have indicia adjacent to the indicators that provide the corresponding numerical value. By way of example, depressing button 36 will cause the hub 24 to rotate for 5 minutes. Illumination of the indicator 46 will allow the user to determine which interval was selected.

Alternatively, one of the buttons may be an on/off switch and the other buttons may be used to select the speed of hub rotation.

As shown in Figure 3 the jump rope 12 may have a ball 50 that can snap into a corresponding slot 52 in the crank arm 22. This allows the user to easily attach and detach the rope 12 from the arm 22. Likewise, as shown in Figure 4, the hub 24 may have a corresponding slot 54 that receives the crank arm 22. As shown in Figure 5, the hub 24 may be assembled from two half pieces 56 coupled together by springs 58. The springs 58 may bias the pieces 56 into a closed position and exert a spring force that retains the crank arm 22 within the hub slot 54.

Figure 6 shows an embodiment of a hub platform 14 that contains a motor 60 coupled to the hub 22 by a gear assembly 62. Figure 7 shows an embodiment of an

electrical circuit for the apparatus. The circuit may include a timer 64 that controls activation of the motor 60. The timer 64 may be a controller circuit that receives input from buttons 32, 34, 36 or 38 and can 5 illuminate indicators 40, 42, 44 or 46. The timer 64 may also drive a speaker 66 or other sound generating device (see also Fig. 2). All of the electrical circuits and devices may be powered by a battery 68.

In operation, the user depresses one of the buttons 10 32, 34, 36 or 38 to set the time interval of operation. Alternatively, the buttons 32, 34, 36 or 38 may set the speed of the motor 60. Upon selecting a button the timer 64 begins a count until the motor 60 is activated. The timer 64 may drive the speaker 66 to emit a sound such as 15 a beeping sound to indicate that the motor 60 is about to be activated. The timer 64 also illuminates an indicator that corresponds to the selected button.

At the end of the count the timer 64 activates the motor 60. The timer 64 may begin another count that 20 corresponds to the selected time interval. At the end of the time interval the timer 64 deactivates the motor 60.

The timer 64 may cause the indicator to flash to indicate to the user that the motor is about to be deactivated.

Figure 8 shows an alternate embodiment of an apparatus that has a mechanical switch 70 for setting the 5 time interval of the motor. The switch 70 may have discrete settings with corresponding light indicators 72 that are illuminated to indicate the selected time interval. The apparatus may also have a separate on/off switch 74.

10 Figure 9 is an alternate embodiment of an apparatus that can be operated in a vertical mode. A hub platform 76 is placed on a surface so that a hub 78 rotates a crank arm 80 and a jumping element 82 about a vertical axis 84. In operation the user can select a time interval or speed 15 by depressing one of the buttons 88, 90, 92 or 94, which causes an illumination of an indicator 96, 98, 100 or 102. An internal timer counts down a certain time interval, providing an audible indication of the impending activation of the motor. This allows the user to position 20 themselves to jump over the rope when the motor is activated. The motor is then activated for the selected time interval. The automatic deactivation of the motor at

the end of the time intervals allows the player to discontinue play without having to reach the hub platform 76. Ball 86, attached to jumping element 82, provides both a visual indication as to the position of the 5 rotating jumping element, and also provides a weight mass to stabilize the jumping element as it rotates.

Figures 10 and 11 show an embodiment wherein the hub platform 14 can be located in a horizontal mode or placed in a horizontal position for use in a vertical mode. The 10 base 16' may have a cavity 104 that receives the hub platform 14 for use in the vertical mode.

While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely 15 illustrative of and not restrictive on the broad invention, and that this invention not be limited to the specific constructions and arrangements shown and described, since various other modifications may occur to those ordinarily skilled in the art.